FOOTREST CONSTRUCTION

BACKGROUND OF THE INVENTION

Field of the Invention

The present invention relates to a footrest construction for a seater to put his/her foot on a footrest.

Description of the Related Art

Conventionally, a vehicular seat has been provided with a footrest.

This footrest comprises a footrest plate on which a seater puts his/her foot and support pipes for supporting the footrest plate. The support pipes are supported on holding pipes in a bracket provided under the seat so as to be capable of being freely pulled out.

Thereby, at a normal time, a storage state can be formed in which the support pipes are inserted in the holding pipes to move the footrest plate toward the seat. Also, when the footrest is used, a pulling-out state can be formed by pulling the support pipes out of the holding pipes to arrange the footrest plate on the front side of the seat.

However, such a footrest has a problem in that the support pipes are positioned by slidable contact resistance with the holding pipes, and therefore the footrest in the storage state cannot be held surely.

To overcome this problem, it can be thought that the slidable contact resistance between the support pipe and the holding pipe is increased. In this case, however, there arises a problem in that the pulling-out operability is deteriorated.

SUMMARY OF THE INVENTION

The present invention has been achieved in view of the above conventional problems, and accordingly an object thereof is to provide a footrest construction capable of surely holding a footrest without impairing the pulling-out operability.

To solve the above problems, the present invention as set forth in claim 1 provides a footrest construction in which a support bar of a footrest is supported so as to be capable of being freely pulled out of a support portion, wherein a lock mechanism is provided in which when a storage state is formed by moving the footrest toward the support portion, movement of the support bar in a pullout direction from the support portion is blocked.

That is to say, when the storage state is formed by moving the footrest toward the support portion, the movement of the support bar of the footrest in the pullout direction from the support portion is blocked by the lock mechanism.

Therefore, the footrest in the storage state can be held surely.

Also, in the footrest construction as set forth in claim 2, an engagement groove is provided in a side face of the support bar, and the lock mechanism is formed by providing a locking claw which is urged toward the side face of the support bar and engages with the engagement groove in the support bar in the storage state and a release lever for releasing an engagement state of the locking claw with the engagement groove at operation time thereof.

That is to say, when the footrest is made in the storage state, the locking claw urged toward the side face of the support bar is engaged with the engagement groove formed in the side face of the support bar, whereby the movement of the footrest in the pullout direction is blocked.

When the footrest is used, the engagement state of the locking claw with the engagement groove is released by operation of the release lever.

Further, in the footrest construction as set forth in claim 3 and claim 4, a handle for operation is provided in one side portion of the footrest; the support bar is formed by a first bar extending from one side portion in which the handle is provided and a second bar extending from the other side portion; the support portion is provided with a first holding portion for holding the first bar so as to be capable of being freely pulled out and a second holding portion for holding the second bar so as to be capable of being freely pulled out; and the slidable contact resistance between the second bar and the second holding portion is set so as to be

lower than the slidable contact resistance between the first bar and the first holding portion.

That is to say, the handle for operation is provided in one side portion of the footrest, and the footrest is pulled out or stored by using this handle.

At this time, the slidable contact resistance between the second bar and the second holding portion that are distant from the handle is set so as to be lower than the slidable contact resistance between the first bar and the first holding portion that are close to the handle. Therefore, the sliding motion of the second bar at which the operating force from the handle is low can be performed smoothly.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view showing one embodiment of the present invention;

FIG. 2 is a sectional view of an essential portion of the embodiment shown in FIG. 1;

FIG. 3 is a perspective view of a lever component of the embodiment shown in FIG. 1; and

FIG. 4 is an exploded perspective view showing a holding construction of a footrest of the embodiment shown in FIG. 1.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

One embodiment of the present invention will now be described with reference to the accompanying drawings. FIG.

1 is a view of a footrest 1 having a footrest construction in accordance with the embodiment.

The footrest 1 comprises a footrest plate 11 on which a seater puts his/her foot and support bars 12 for supporting the footrest plate 11. A handle 13 for pulling out/pushing in the footrest 1 extends to the right from the right-hand side portion of the footrest plate 11. The support bars 12 are made up of a first bar 14 extending to the rear R from the right-hand side portion of the footrest plate 11 provided with the handle 13 and a second bar 15 extending to the rear R from the left-hand side portion of the footrest plate 11. Both the bars 14 and 15 are formed of a metallic round bar. The support bars 12 made up of both the bars 14 and 15 are supported so as to be capable of being freely pulled out of a bracket 16 for fixing a seat as a support portion provided under the seat.

On a first box 21 provided in the right-hand side portion of the bracket 16, a first holding pipe 22, which is a first holding portion, is fixed in a state of being inclined downward to a front, and in the first holding pipe 22, the first bar 14 is inserted so as to be capable of being freely inserted and drawn. Also, on a second box 23 provided in the left-hand side portion of the bracket 16, a second holding pipe 24, which is a second holding portion, is fixed in a state of being inclined downward to the front, and in the second holding pipe 24, the second bar 15 is inserted so as to be capable of being freely inserted and drawn.

Both the bars 14 and 15 are configured so that the extension thereof from each of the holding pipe 22, 24 is regulated by a stopper (not shown), and at a normal time, a storage state K can be formed by inserting both the bars 14 and 15 in the holding pipes 22 and 24, respectively, to move the footrest plate 11 toward the seat. Also, they are configured so that when the footrest 1 is used, a pulling-out state (not shown) can be formed by pulling both the bars 14 and 15 out of the holding pipes 22 and 24, respectively, to arrange the footrest plate 11 on the front side of the seat.

As shown in FIG. 2, in the first box 21, there is provided a lock mechanism 31 for blocking the movement of the first bar 14 in a pullout direction from the first holding pipe 22 when the storage state K is formed.

Specifically, on the upper face of the first bar 14, a linear engagement groove 41 extending transversely is formed on the upper face side, and in the first holding pipe 22, a notch 42 is formed just above a position at which the engagement groove 41 in the first bar 14 is located in the storage state K. Also, on the front F side of the notch 42 is fixed a support bracket 43, and a lever component 45 is rotatably supported on a rotating shaft 44 at the upper part of the support bracket 43 as shown in FIG. 3.

The lever component 45 is formed by bending a metal sheet, and a locking claw 52 that is bent transversely and extends downward is provided at the rear end of the left-hand side portion 51. As shown in FIG. 2, the locking claw 52 passes

through the notch 42 in the first holding pipe 22 and engages with the engagement groove 41 in the first bar 14, which is in the storage state K, in a state of being inserted.

In a right-hand side portion 61 of the lever component 45 (see FIG. 3), a protrusion 62 protruding upward is formed. To the tip end of the protrusion 62, one end of a coil spring 63 is locked. The other end of the coil spring 63 is locked to an upright wall 64 in the first box 21. For the lever component 45, the locking claw 41 is urged toward the upper face of the first lever 14 by the coil spring 63.

From a left-hand side portion 51 of the lever component 45 (see FIG. 3), a tongue 71 extending toward the front F is formed. The tongue 71 passes through an opening 73 in a front wall 72 of the first box 21. A resin-made knob 74 is fitted on the tongue 71, and there is formed a release lever 75 for releasing an engagement state with the engagement groove 41 by displacing the locking claw 52 upward when the knob 74 is pressed downward by a finger.

As shown in FIG. 4, at the front and rear ends of the first holding pipe 22, resin-made first bushes 82 through which the first bar 14 passes are inserted, and at the front and rear ends of the second holding pipe 24, resin-made second bushes 83 through which the second bar 15 passes are inserted.

The first bush 82 consists of a circular ring shaped collar portion 91 and a cylindrical portion 92 extending from the collar portion 91, and the cylindrical portion 92 is formed with an engagement hole 94 with which a claw 93 formed

by cutting and raising a part of the first holding pipe 22 engages. At a tip end of the cylindrical portion 92, a diameter-decreasing portion 95 narrowed toward the center is formed so that the diameter-decreasing portion 95 is in slidable contact with the whole circumferential surface of the first bar 14.

On the other hand, the second bush 83 consists of a circular ring shaped collar portion 101 and extensions 102, 102 of an arcuate shape in cross section, which extend from the collar portion 101 so as to face each other. Each extension 102, 102 is formed with engagement holes 104, 104 with which a claw 103 formed by cutting and raising a part of the second holding pipe 24 engages. At tip ends of the extensions 102, 102, bent portions 105, 105 bent toward the center are formed so that both the bent portions 105, 105 are in slidable contact with the circumferential surface of the second bar 15.

Thereby, the slidable contact resistance between the second holding pipe 24 in which the second bushes 83 are fitted and the second bar 15 is set so as to be lower than the slidable contact resistance between the first holding pipe 22 in which the first bushes 82 are fitted and the first bar 14.

In this embodiment configured as described above, when the storage state K is formed by moving the footrest 1 toward the bracket 16 under the seat, the support bars 12 of the footrest 1 are prevented by the lock mechanism 31 from moving in the direction such as to be pulled out of the bracket 16.

Therefore, the footrest 1 in the storage state K can be held surely without increasing holding force of the support bars 12 even if a great force is produced, for example, at vehicle collision.

Thus, the footrest 1 can be prevented from projecting unexpectedly without impairing pulling-out operability.

Also, merely by storing the footrest 1, the locking claw 52 of the lock mechanism 31 urged toward the upper face of the first bar 14 can be engaged with the engagement groove 41 in the upper face of the first bar 14. Thereby, a locked state in which the movement of the footrest 1 in a pullout direction is blocked can be formed.

On the other hand, when the footrest 1 is used, while the handle 13 in the right-hand side portion of the footrest plate 11 is gripped by one hand, the release lever 75 of the lock mechanism 31 is pressed downward by the thumb of the hand. Thereby, the locking claw 52 is moved upward, and an unlocked state in which the engagement state of the locking claw 52 with the engagement groove 41 is released can be formed.

Thus, at the storage time, merely by storing the footrest 1, the locked state can be formed. Also, at the pullout time, the unlocked state can be formed by a hand operating the handle 13 of the footrest 1.

Also, by operating the handle 13, the footrest 1 can be pulled out or stored. Therefore, the hand can be prevented from being soiled at the operation time.

At this time, the slidable contact resistance between the second bar 15 and the second holding pipe 24 that are distant from the handle 13 is set so as to be lower than the slidable contact resistance between the first bar 14 and the first holding pipe 22 that are close to the handle 13. Therefore, the sliding motion of the second bar 15 at which the operating force from the handle 13 is low can be performed smoothly.

Accordingly, both the bars 14 and 15 can be moved in parallel, and hence the pullout and storage operations of the footrest 1 can be performed easily.

As described above, in the footrest construction as set forth in claim 1, the movement in the pullout direction of the support bars of the footrest in the storage state can be blocked by the lock mechanism. Therefore, the support bars can be held surely without increasing the holding force of the support bar.

Thus, the footrest can be prevented from projecting unexpectedly without impairing the pulling-out operability.

Also, in the footrest construction as set forth in claim 2, merely by making the footrest in the storage state, the locking claw urged toward the support bar is engaged with the engagement groove in the support bar, by which the movement in the pullout direction of the footrest can be blocked. When the footrest is used, the engagement state of the locking claw with the engagement groove can be released by the operation of the release lever.

Thereby, the locked state and the unlocked state of footrest can be formed easily.

Further, in the footrest construction as set forth in claim 3 and claim 4, the footrest can be pulled out or stored by operating the handle provided in one side portion of the footrest. Thereby, the hand can be prevented from being soiled at the operation time.

At this time, the slidable contact resistance between the second bar and the second holding portion that are distant from the handle is set so as to be lower than the slidable contact resistance between the first bar and the first holding portion that are close to the handle. Therefore, the sliding motion of the second bar at which the operating force from the handle is low can be performed smoothly.

Accordingly, both the bars can be moved in parallel, and hence the pullout and storage operations of the footrest can be performed easily.